

ABSTRACT OF THE DISCLOSURE

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Methods and devices are disclosed utilizing a silicon-
containing barrier layer. A method of forming a barrier layer on
a semiconductor device is disclosed. A semiconductor device is
5 provided. A silicon-containing material is deposited on the
semiconductor device. The silicon-containing material is
processed in a reactive ambient. The barrier layer can be made
primarily oxide, primarily nitride or both by the reactive
ambient selected. A semiconductor device is disclosed. The
10 semiconductor device includes a substrate, a gate oxide, a
silicon-containing barrier layer and a gate electrode. The gate
oxide is formed over the substrate. The silicon-containing
barrier layer is formed over the gate oxide by causing silicon
atoms of a precursor layer react with a reactive agent. The gate
15 electrode is formed over the silicon-containing barrier layer.
Other embodiments utilizing a barrier layer are disclosed.